

UNEXAMINED UTILITY MODEL APPLICATION PUBLICATION No. H05-62448

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(Partial Translation)

[ABSTRACT]

[Objective] A low-cost configuration is utilized to fit a case and a cover to each other by caulking, where the case constitutes a housing for housing therein an in-vehicle electronic control apparatus or the like, with it being possible to ensure a sufficient tensile strength for the fitting by caulking.

[Configuration] When a pouched case 32 and a cover 33 are fitted to each other by caulking, a cut 38 is formed in a peripheral edge section 33a of the cover 33. The cut 38 includes a first inclined surface 41 which is orthogonal to a direction, which is indicated by a reference numeral 44, of fitting the cover 33 with the case 32 and a second inclined surface 42 which has a lower gradient than the first inclined surface 41. With such a configuration, when a pressing portion 51 corresponding to the cut 38, in an end section 32a of the case 32, is pressed by a pressing jig 50, a base section 51a of the pressing portion 51 is fitted against a step-like surface 52 formed by the first inclined surface 41. This can achieve a sufficient tensile strength. Furthermore, with the above-described configuration, it is not required to form a slit or the like in the vicinity of the pressing portion 51. As a consequence, desirable fitting by caulking can be realized based on a low-cost configuration.

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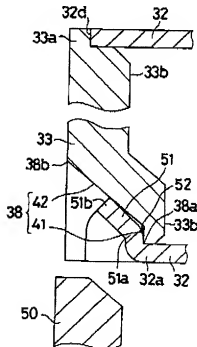
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(54)【考案の名称】 ケースと蓋との嵌合構造

(57)【要約】

【目的】 車載用の電子制御装置などを収納する筐体を構成するケースと蓋とのかしめ止めを安価な構造で実現し、充分な引張強度を確保する。

【構成】 袋状のケース32に蓋33をかしめ止めするにあたって、蓋33の外周縁部33aに切欠き38を形成する。この切欠き38は、参照符44で示される蓋33のケース32への嵌め込み方向と垂直な第1傾斜面41と、前記第1傾斜面41よりも緩やかな第2傾斜面42とから構成されている。したがってケース32の端部32aにおいて、前記切欠き38に対応する押圧箇所51を押圧治具50で押圧すると、その基端部51aは前記第1傾斜面41によって形成される段差面52に嵌り込み、こうして充分な引張強度を確保することができる。また押圧箇所51付近にスリットなどを形成する必要はなく、これによって安価な構造で実現することができる。



【実用新案登録請求の範囲】

【請求項1】 袋状のケースに蓋を嵌合するための構造において、

前記ケースまたは蓋のいずれか一方の端部において、1または複数箇所に切欠きを形成し、該切欠きは、該切欠きの始端に形成され、蓋のケースへの嵌め込み方向に対して略垂直な第1係止面と、前記第1係止面に連なり、該第1係止面よりも前記嵌め込み方向に対して緩やかに傾斜する第2係止面とを有し、
ケースの端部に蓋の端部を対向させた後、前記ケースまたは蓋のいずれか他方において、前記切欠きに対応する箇所をかしめることを特徴とするケースと蓋との嵌合構造。

【図面の簡単な説明】

【図1】 本考案の一実施例の断面図である。

【図2】 図1の一部分の分解斜視図である。

【図3】 蓋33のケース32への取付部付近を拡大して示す断面図である。

* 【図4】 本件考案者の実験結果を示す断面図である。

【図5】 典型的な従来技術の断面図である。

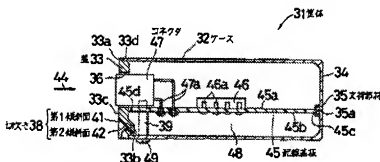
【図6】 従来技術の切欠き8付近を拡大して示す断面図である。

【図7】 他の従来技術の分解斜視図である。

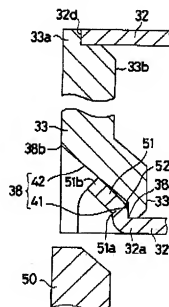
【符号の説明】

- 31 蓋体
- 32 ケース
- 33 蓋
- 34 切欠き
- 41 第1傾斜面
- 42 第2傾斜面
- 45 配線基板
- 47 コネクタ
- 50 押圧治具
- 51 押圧箇所
- 52 段差面

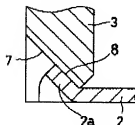
【図1】



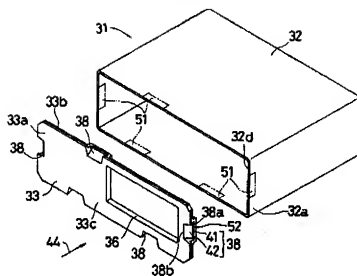
【図3】



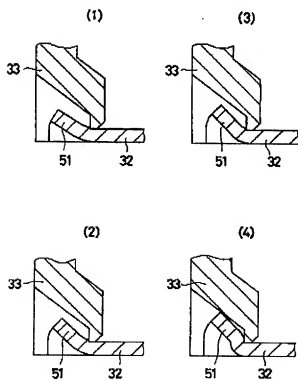
【図6】



【図2】



【図4】



【考案の詳細な説明】

【0001】

【産業上の利用分野】

本考案は、自動車に搭載される各種の電子制御装置の配線基板を収納するための筐体に好適に実施されるケースと蓋との嵌合構造に関する。

【0002】

【従来の技術】

自動車に搭載される各種の電子制御装置、たとえば内燃機関の燃料噴射量や点火時期などを制御する制御装置、自動変速機の変速段を切換える制御装置、およびアンチロックブレーキ制御装置は、配線基板上にマイクロコンピュータや該マイクロコンピュータの出力に応答して負荷を駆動制御するリレーなどが実装されて構成されており、筐体内に収納されてエンジンルームなどに取付けられている。前記配線基板は、筐体に形成された透孔内に埋込まれるコネクタを介して、センサやアクチュエータなどに接続されたワイヤハーネスのコネクタに接続されている。このような電子制御装置を収納する筐体において、いわゆるパワーシートなどの制御装置などの車室内に設けられる制御装置を収納する典型的な従来技術の筐体1は、図5で示される。

【0003】

この筐体1は、アルミなどの塑性変形可能な材料から成り、大略的に、ケース2と蓋3とから構成されている。ケース2は袋状に形成され、その背面板4には、シリコンゴムなどから成り、凹溝5aを有する支持部材5が取付けられている。蓋3には、透孔6が形成されるとともに、該蓋3の外周縁部において複数箇所に緩やかな傾斜面7を備える切欠き8が形成されている。また、前記蓋3の背面3bからは支持台9が延設されており、この支持台9と前記支持部材5とによって配線基板10が支持される。

【0004】

配線基板10は、その表面10aにマイクロコンピュータなどの電子部品11やコネクタ12などが実装された後、ケース2内の開口部に形成される収納空間13内に収納され、前記支持部材5および支持台9によって支持されるとともに

、ケース2の外方から遊挿されたビス14によって図5の上下方向、すなわち後述する矢符15方向とは垂直方向へのがたつきが防止される。

【0005】

こうして配線基板10が収納された後、ケース2に蓋3が矢符15方向から嵌め込まれ、図6で示されるように、ケース2の端部2aにおいて前記切欠き8に対応する箇所はかしめられ、こうしてケース2に蓋3が固定される。ケース2に蓋3が固定されると、前記コネクタ12は蓋3に形成された前記透孔6から外方に臨んでおり、前記センサやアクチュエータなどと接続されたコネクタと嵌着される。

【0006】

【考案が解決しようとする課題】

上述のように構成された従来技術の筐体1において、コネクタ12の前記矢符15方向とは反対方向への引抜きに要する荷重は、たとえば9kgfである。これに対して切欠き8のかしめ止め箇所における引張り限界荷重は、たとえば13kgf程度である。したがってコネクタ12の引抜きの際に、該コネクタ12への引抜き荷重が配線基板10から蓋3に加わり、外れてしまうことがある。

【0007】

上述のような不具合を解消するための他の従来技術は、図7で示される。この従来技術では、筐体21において、蓋23の外周縁部23aに形成される切欠き28には、前記矢符15で示される該蓋23の嵌め込み方向に対して垂直な段差面27が形成されている。このため、ケース22の端部22aにおいて前記切欠き28に対応する箇所は、一対のスリット29が形成された後、かしめられており、これによって十分な引張り強度を得ている。

【0008】

しかしながらこの図7で示される従来技術では、ケース22にスリット29を形成するための工程が必要となり、コストが高くなる。

【0009】

本考案の目的は、安価な構造で十分な引張り強度を得ることができるケースと蓋との嵌合構造を提供することである。

【0010】

【課題を解決するための手段】

本考案は、袋状のケースに蓋を嵌合するための構造において、

前記ケースまたは蓋のいずれか一方の端部において、1または複数箇所に切欠きを形成し、該切欠きは、該切欠きの始端に形成され、蓋のケースへの嵌め込み方向に対して略垂直な第1係止面と、前記第1係止面に連なり、該第1係止面よりも前記嵌め込み方向に対して緩やかに傾斜する第2係止面とを有し、

ケースの端部に蓋の端部を対向させた後、前記ケースまたは蓋のいずれか他方において、前記切欠きに対応する箇所をかしめることを特徴とするケースと蓋との嵌合構造である。

【0011】

【作用】

本考案に従えば、電子制御装置などを収納する筐体を、袋状のケースに蓋を嵌合することによって構成する。前記ケースまたは蓋のいずれか一方の端部、たとえば蓋の外周縁部において、1または複数箇所に切欠きが形成される。この切欠きは、ケース側の始端部分において蓋のケースへの嵌め込み方向に対して略垂直な第1係止面と、この第1係止面に連なって前記垂直よりも緩やかな傾斜を有する第2係止面とによって形成されている。ケース内に前記電子制御装置などが収納され、蓋が嵌め込まれた後、前記ケースまたは蓋のいずれか他方、すなわちケースの端部において前記切欠きに対応する箇所がかしめ止めされる。

【0012】

したがって、前記電子制御装置に備えられているコネクタの引抜きなどによって蓋に引張り荷重が加わっても、切欠きの第1係止面によって形成される段差面にケースの端部が嵌り込み、これによって十分な引張り強度を得ることができる。また比較的短い第1係止面に続いて第2係止面が形成されているので、ケースの端部において該切欠きに対応する部分にスリットなどを形成する必要がなく、通常の簡便なかしめ止めによってケースに蓋を強固に固定することができる。

【0013】

【実施例】

図1は本考案の一実施例の断面図であり、図2はその一部分の分解斜視図である。筐体31は、アルミなどの塑性変形可能な材料から成り、大略的に、ケース32と蓋33とを含んで構成されている。ケース32は袋状に形成され、その背面板34には、シリコンゴムなどから成り、凹溝35aが形成された支持部材35が取付けられている。

【0014】

一方、蓋33には、透孔36が形成されるとともに、その外周縁部33aにおいて複数箇所に切欠き38が形成されている。前記切欠き38は、板状に形成される蓋33の表面33cと平行に、すなわち後述する矢符44で示される蓋33のケース32への嵌め込み方向とは垂直な方向に延びる第1傾斜面41と、この第1傾斜面41よりも前記矢符44に対して緩やかに傾斜している第2傾斜面42とから形成されている。したがって、第1傾斜面41は切欠き38の始端38aに臨み、第2傾斜面42は切欠き38の終端38bに臨む。また、この蓋33の背面33bからは、支持台39が延設されている。この支持台39と前記支持部材35とによって配線基板45が支持される。

【0015】

前記配線基板45の表面45aにマイクロコンピュータなどの電子部品46やコネクタ47が装着され、それらの端子46a、47aが配線基板45の裏面45bで回路パターンと半田付けされることによって電子制御装置が構成される。このようにして電子部品46やコネクタ47などが実装された配線基板45は、ケース32の収納空間48内に収納された後、後述するようにしてケース32に蓋33がかしめ止めされ、その後、ビス49によってねじ止め固定される。これによって、配線基板45の一方の端部45cは前記支持部材35の凹溝35aによって保持され、また他方の端部45dはビス49によって支持台39上にたつきなく保持される。この状態でコネクタ47は前記透孔36から外方に臨み、該コネクタ47にはセンサやアクチュエータなどに接続されているワイヤハーネスのコネクタが嵌着される。

【0016】

図3は、蓋33のケース32への取付部付近を拡大して示す断面図である。蓋

33がケース32に嵌め込まれると、該蓋33の外周縁部33aにおいて背面33bはケース32の開口端面32dに当接する。この状態で、押圧治具50によってケース32の端部32aにおいて前記切欠き38に対応する押圧箇所51を押圧することによって、該押圧箇所51の基端部51aは切欠き38の第1傾斜面41によって形成される段差面52に従って塑性変形する。また該押圧箇所51の遊端部51b側は前記第2傾斜面42に従って緩やかに傾斜するように塑性変形される。したがって、押圧箇所51の基端部51aとケース32の開口端面32dとによって蓋33を挟持し、こうして蓋33はケース32に強固に固定される。なお、本件考案者の実験結果によれば、ケース32の端部32a部分の肉厚が0.8mmであるとき、前記矢符44方向とは反対方向へのコネクタ47の引抜き時における限界荷重は65kgfであった。したがって前記図5で示される従来技術と比較して約5倍程度の引張り強度を得ることができ、前記引抜き時に蓋33がケース32から外れることを確実に防止することができる。また、押圧箇所51部分に、図7の従来技術で示されるようなスリットなどを形成しておく必要はなく、したがって安価な構成で実現することができる。

【0017】

図4は、本件考案者の実験結果を示す断面図である。図4(1)は、ケース32の押圧箇所51を押圧治具50によって押圧する際の荷重が40kgfであるときの該押圧箇所51の塑性変形の状態を示す断面図である。また図4(2)は前記押圧荷重が50kgfである状態を示し、図4(3)は前記押圧荷重が60kgfである状態を示し、図4(4)は前記押圧荷重が75kgfである状態を示す。したがって、このような図4(1)～図4(4)から、前記押圧箇所51は、前述のようにケース32の肉厚が0.8mmであるときには、75kgf程度の押圧荷重で、充分な引張強度のかしめ止めが可能であることが理解される。

【0018】

【考案の効果】

以上のように本考案によれば、蓋をケースにかしめ止めるにあたって、かしめ止めのための切欠きを、嵌め込み方向に対して略垂直な第1係止面と、この第1係止面よりも緩やかな第2係止面とによって形成するので、かしめられたケー

スまたは蓋の端部は前記第1係止面によって生じる段差面に嵌り込み、これによって蓋のケースからの引張強度を充分に得ることができる。また、前記切欠きに対応して前記端部にはスリットなどを形成しておく必要はなく、安価な構造で実現することができる。

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CLAIMS

[Utility model registration claim]

[Claim 1] In the structure for fitting a lid into a saccate case, a notch is formed in 1 or two or more places in the edge of either said case or a lid. This notch it forms in the start edge of this notch -- having -- the insertion direction to the case of a lid -- receiving -- abbreviation -- with the perpendicular 1st stop side In said case after standing in a row in said 1st stop side, having the 2nd stop side which inclines gently to said insertion direction rather than this 1st stop side and making the edge of a lid counter the edge of a case, or any of a lid or another side Fitting structure of the case and lid which are characterized by closing the part corresponding to said notch.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed explanation of a design]

[0001]

[Industrial Application]

This design is related with the fitting structure of the case and lid which are carried out suitable for the housing for containing the wiring substrate of various kinds of electronic controls carried in an automobile.

[0002]

[Description of the Prior Art]

The relay which answers the output of a microcomputer or this microcomputer and carries out drive control of the load on a wiring substrate is mounted and constituted, and the control device which controls fuel oil consumption, ignition timing, etc. of various kinds of electronic controls carried in an automobile, for example, an internal combustion engine, the control device which switches the gear ratio of an automatic transmission, and an anti-lock brake control device are

contained in a housing, and are attached in the engine room etc. Said wiring substrate is connected to the connector of the wire harness connected to the sensor, the actuator, etc. through the connector embedded in the bore formed in the housing. In the housing which contains such an electronic control, the housing 1 of the typical conventional technique which contains the control unit formed in the vehicle interior of a room, such as the so-called control unit of a power seat, is shown by drawing 5.

[0003]

This housing 1 consists of the ingredient of aluminum etc. which can be deformed plastically, and consists of a case 2 and a lid 3 in profile. A case 2 is formed in saccate, it changes from silicone rubber etc. to the tooth-back plate 4, and the supporter material 5 which has concave 5a is attached. While a bore 6 is formed, the notch 8 which equips two or more places with the loose inclined plane 7 at the periphery edge of this lid 3 is formed in the lid 3. Moreover, from tooth-back 3b of said lid 3, susceptor 9 is installed and the wiring substrate 10 is supported by this susceptor 9 and said supporter material 5.

[0004]

While the wiring substrate 10 is contained in the storage space 13 formed in opening within a case 2 after electronic parts 11, connectors 12, etc., such as a microcomputer, are mounted in the surface 10a and supported by said supporter material 5 and susceptor 9, shakiness by the perpendicular direction is prevented with the vertical direction of drawing 5, i.e., arrow mark 15 directions mentioned later, by the screw 14 inserted from the way outside the case 2.

[0005]

in this way, the part corresponding to [in / after the wiring substrate 10 is contained, as a lid 3 is inserted in a case 2 from arrow mark 15 directions and it is shown by drawing 6 / edge 2a of a case 2] said notch 8 -- caulking ** -- a lid 3 is fixed to a case 2 in this way. If a lid 3 is fixed to a case 2, the method of outside will be faced said connector 12 from said bore 6 formed in the lid 3, and it will be attached with the connector connected with said sensor, actuator, etc.

[0006]

[Problem(s) to be Solved by the Device]

In the housing 1 of the conventional technique constituted as mentioned above, the loads which drawing to an opposite direction takes said arrow mark 15 directions of a connector 12 are 9kgf(s). On the other hand, you make it go away notch 8, and the tension critical load in a stop part is for example, 13kgf extent. Therefore, in the case of drawing of a connector 12, from the wiring substrate 10, the drawing load to this connector 12 may join a lid 3, and may separate.

[0007]

Other conventional techniques for canceling the above faults are shown by drawing 7. With this conventional technique, the perpendicular level difference side 27 is formed in the notch 28 formed in periphery edge 23a of a lid 23 in the housing 21 to the insertion direction of this lid 23 shown by said arrow mark 15. For this reason, the part on edge 22a of a case 22 and corresponding to said notch 28 has obtained sufficient tensile strength by the caulking **** cage and this, after the slit 29 of a pair is formed.

[0008]

However, with the conventional technique shown by this drawing 7, the process for forming a slit 29 will be needed for a case 22, and cost will increase.

[0009]

The purpose of this design is offering the fitting structure of the case and lid which can obtain tensile strength sufficient with cheap structure.

[0010]

[Means for Solving the Problem]

In structure for this design to fit a lid into a saccate case A notch is formed in 1 or two or more places in the edge of either said case or a lid. This notch it forms in the start edge of this notch -- having -- the insertion direction to the case of a lid -- receiving -- abbreviation -- with the perpendicular 1st stop side It stands in a row in said 1st stop side, and has the 2nd stop side which inclines gently to said insertion direction rather than this 1st stop side. In said case after making the edge of a lid counter the edge of a case, or any of a lid or another side It is the fitting structure of the case and lid which are characterized by closing the part corresponding to said notch.

[0011]

[Function]

If this design is followed, the housing which contains an electronic control etc. is constituted by fitting a lid into a saccate case. A notch is formed in 1 or two or more places in said case or one edge of the lids, for example, the periphery edge of a lid. this notch -- a part for the leader by the side of a case -- setting -- the insertion direction to the case of a lid -- receiving -- abbreviation -- it is formed of the perpendicular 1st stop side and the 2nd stop side where it stands in a row in this 1st stop side, and said perpendicular twist also has a loose inclination. After said electronic control etc. is contained and a lid is inserted in in a case, in said case, or any of a lid or another side, i.e., the edge of a case, the caulking stop of the part corresponding to said notch is carried out.

[0012]

Therefore, even if a tensile load joins a lid by drawing of the connector with which said electronic control is equipped etc., the edge of a case gets into the level difference side formed of the 1st stop side of a notch, and sufficient tensile strength can be obtained by this. Moreover, since the 2nd stop side is formed following the comparatively short 1st stop side, it is not necessary to form a slit etc. in the part corresponding to this notch, and can close into it among [usual] simple in the edge of a case, and a lid can be firmly fixed to a case by the stop.

[0013]

[Example]

Drawing 1 is the sectional view of one example of this design, and drawing 2 is some of the decomposition perspective views. A housing 31 consists of the ingredient of aluminum etc. which can be deformed plastically, and is constituted in profile including the case 32 and the lid 33. A case 32 is formed in saccate, it changes from silicone rubber etc. to the tooth-back plate 34, and the supporter material 35 in which concave 35a was formed is attached.

[0014]

On the other hand, while a bore 36 is formed in a lid 33, the notch 38 is formed in two or more places in the periphery edge 33a. Said notch 38 is formed from the 1st inclined plane 41 which extends in the direction where the insertion direction to the case 32 of the lid 33 shown by the arrow mark 44 mentioned later in parallel with surface 33c of the lid 33 formed in tabular is perpendicular, and the 2nd inclined plane 42 which inclines gently to said arrow mark 44 rather than this 1st inclined plane 41. Therefore, start edge 38a of a notch 38 is faced the 1st inclined plane 41, and it faces the 2nd inclined plane 42 termination 38b of a notch 38. Moreover, susceptor 39 is installed from tooth-back 33b of this lid 33. The wiring substrate 45 is supported by this susceptor 39 and said supporter material 35.

[0015]

Surface 45a of said wiring substrate 45 is equipped with electronic parts 46 and connectors 47, such as a microcomputer, and an electronic control is constituted by soldering those terminals 46a and 47a with a circuit pattern by rear-face 45b of the wiring substrate 45.

Thus, after the wiring substrate 45 with which electronic parts 46, a connector 47, etc. were mounted is contained in the storage space 48 of a case 32, as it mentions later, the caulking stop of the lid 33 is carried out to a case 32, and stop immobilization of it is ****ed and carried out on a screw 49 after that. One edge 45c of the wiring substrate 45 is held by concave 35a of said supporter material 35, and on a screw 49, 45d of other-end sections shakes on susceptor 39, and they are held by this that there is nothing. The method of outside is faced a connector 47 from said bore 36 in this condition, and the connector of the wire harness connected to the sensor, the actuator, etc. is attached in this connector 47.

[0016]

Drawing 3 is the sectional view expanding and showing near the attachment section to the case 32 of a lid 33. If a lid 33 is inserted in a case 32, in periphery edge 33a of this lid 33, tooth-back 33b will contact 32d of opening end faces of a case 32. End face section 51a of this press part 51 is deformed plastically according to the level difference side 52 formed of the 1st inclined plane 41 of a notch 38 by pressing the press part 51 corresponding to said notch 38 in edge 32a of a case 32 in this condition with the press fixture 50. Moreover, plastic deformation of the free end section 51b side of this press part 51 is carried out so that it may incline gently according to said 2nd inclined plane 42. Therefore, a lid 33 is pinched and a lid 33 is firmly fixed in this way to a case 32 by 32d of opening end faces of end face section 51a of the press part 51, and a case 32. In addition, according to this designer's experimental result, when the thickness of the edge 32a part of a case 32 was 0.8mm, the critical loads [directions / said / arrow mark 44] at the time of drawing of the connector 47 to an opposite direction were 65kgf(s). Therefore, as compared with the conventional technique shown by said drawing 5, about about 5-time tensile strength can be obtained, and it can prevent certainly that a lid 33 separates from a case 32 at the time of said drawing. Moreover, it is not necessary to form a slit as shown with the conventional technique of drawing 7 etc. in press part 51 part, therefore can realize with a cheap configuration into it.

[0017]

Drawing 4 is the sectional view showing this designer's experimental result. Drawing 4 (1) is the sectional view showing the condition of the plastic deformation of this press part 51 in case the loads at the time of pressing the press part 51 of a case 32 with the press fixture 50 are 40kgf(s). Moreover, drawing 4 (2) shows the condition that said press loads are 50kgf(s), drawing 4 (3) shows the condition that said press loads are 60kgf(s), and drawing 4 (4) shows the condition that said press loads are 75kgf(s). Therefore, it is understood from such drawing 4 (1) - drawing 4 (4) that the caulking stop of tensile strength sufficient by the press load of 75kgf extent is possible for said press part 51 when the thickness of a case 32 is 0.8mm as mentioned above.

[0018]

[Effect of the Device]

according to this design as mentioned above -- a lid -- a case -- a caulking stop -- carrying out -- hitting -- the notch for a caulking stop -- the insertion direction -- receiving -- abbreviation, since it forms according to the perpendicular 1st stop side and the 2nd stop side looser than this 1st stop side The edge of a caulking **** case or a lid gets into the level difference side produced according to said 1st stop side, and can fully obtain the tensile strength from the case of a lid by this. Moreover, it is not necessary to form a slit etc. in said edge corresponding to said notch, and can realize with cheap structure.

TECHNICAL FIELD

[Industrial Application]

This design is related with the fitting structure of the case and lid which are carried out suitable for the housing for containing the wiring substrate of various kinds of electronic controls carried in an automobile.

[0002]

PRIOR ART

[Description of the Prior Art]

The relay which answers the output of a microcomputer or this microcomputer and carries out drive control of the load on a wiring substrate is mounted and constituted, and the control device which controls fuel oil consumption, ignition timing, etc. of various kinds of electronic controls carried in an automobile, for example, an internal combustion engine, the control device which switches the gear ratio of an automatic transmission, and an anti-lock brake control device are contained in a housing, and are attached in the engine room etc. Said wiring substrate is connected to the connector of the wire harness connected to the sensor, the actuator, etc. through the connector embedded in the bore formed in the housing. In the housing which contains such an electronic control, the housing 1 of the typical conventional technique which contains the control unit formed in the vehicle interior of a room, such as the so-called control unit of a power seat, is shown by drawing 5.

[0003]

This housing 1 consists of the ingredient of aluminum etc. which can be deformed plastically, and consists of a case 2 and a lid 3 in profile. A case 2 is formed in saccate, it changes from silicone rubber etc. to the tooth-back plate 4, and the supporter material 5 which has concave 5a is attached. While a bore 6 is formed, the notch 8 which equips two or more places with the loose inclined plane 7 at the periphery edge of this lid 3 is formed in the lid 3. Moreover, from tooth-back 3b of said lid 3, susceptor 9 is installed and the wiring substrate 10 is supported by this susceptor 9 and said supporter material 5.

[0004]

While the wiring substrate 10 is contained in the storage space 13 formed in opening within a case 2 after electronic parts 11, connectors 12, etc., such as a microcomputer, are mounted in the surface 10a and supported by said supporter material 5 and susceptor 9, shakiness by the perpendicular direction is prevented with the vertical direction of drawing 5, i.e., arrow mark 15 directions mentioned later, by the screw 14 inserted from the way outside the case 2.

[0005]

in this way, the part corresponding to [in / after the wiring substrate 10 is contained, as a lid 3 is inserted in a case 2 from arrow mark 15 directions and it is shown by drawing 6 / edge 2a of a case 2] said notch 8 -- caulking ** -- a lid 3 is fixed to a case 2 in this way. If a lid 3 is fixed to a case 2, the method of outside will be faced said connector 12 from said bore 6 formed in the lid 3, and it will be attached with the connector connected with said sensor, actuator, etc.

[0006]

EFFECT OF THE INVENTION

[Effect of the Device]

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Device]

In the housing 1 of the conventional technique constituted as mentioned above, the loads which drawing to an opposite direction takes said arrow mark 15 directions of a connector 12 are 9kgf(s). On the other hand, you make it go away notch 8, and the tension critical load in a stop part is for example, 13kgf extent. Therefore, in the case of drawing of a connector 12, from the wiring substrate 10, the drawing load to this connector 12 may join a lid 3, and may separate.

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[0011]

OPERATION

[Function]

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[0018]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional view of one example of this design.

[Drawing 2] They are some decomposition perspective views of drawing 1.

[Drawing 3] It is the sectional view expanding and showing near the attachment section to the case 32 of a lid 33.

[Drawing 4] It is the sectional view showing this designer's experimental result.

[Drawing 5] It is the sectional view of the typical conventional technique.

[Drawing 6] It is the sectional view expanding and showing near [notch 8] the conventional technique.

[Drawing 7] It is the decomposition perspective view of other conventional techniques.

[Description of Notations]

31 Housing

32 Case

33 Lid

38 Notch

41 1st Inclined Plane

42 2nd Inclined Plane

45 Wiring Substrate

47 Connector

50 Press Fixture

51 Press Part

52 Level Difference Side

[Translation done.]